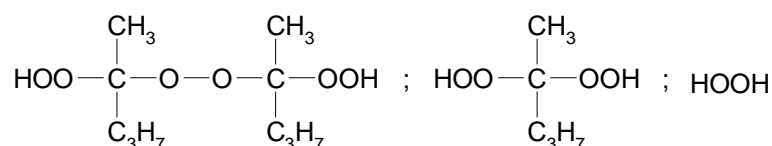


Product Data Sheet

Butanox[®] P-50

Product description

Methyl isopropyl ketone peroxide, solution in dimethyl phthalate



CAS No. : 13921-99-8
EINECS/ELINCS No. : 442-480-8
TSCA status : not listed on inventory

Specifications

Appearance : Clear and colorless liquid
Total active oxygen : 6.3-6.5%

Characteristics

Density, 20°C : 1.1569 g/cm³
Viscosity, 20°C : 20 mPa.s

Storage

Due to the relatively unstable nature of organic peroxides a loss of quality can be detected over a period of time. To minimize the loss of quality, Akzo Nobel recommends a maximum storage temperature (T_s max.) for each organic peroxide product.

For *Butanox* P-50 T_s max. = 25°C
 T_s min. = -10°C

When stored under the recommended storage conditions, *Butanox* P-50 will remain within the AkzoNobel specifications for a period of at least six months after delivery.

Thermal stability

Organic peroxides are thermally unstable substances, which may undergo self-accelerating decomposition. The lowest temperature at which self-accelerating decomposition of a substance in the original packaging may occur is the Self-Accelerating Decomposition Temperature (SADT). The SADT is determined on the basis of the Heat Accumulation Storage Test.

For *Butanox* P-50 SADT : 50°C

The Heat Accumulation Storage Test is a recognized test method for the determination of the SADT of organic peroxides (see Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria - United Nations, New York and Geneva).

Major decomposition products

Carbon dioxide, water, acetone, propane, acetic acid, isopropyl acetate, 3-Methyl-2-butanol

Packaging and transport

The standard packaging is a 30 l HDPE can (Nourytainer[®]) for 25 kg peroxide solution.

Both packaging and transport meet the international regulations. For the availability of other packed quantities contact your AkzoNobel representative.

Butanox P-50 is classified as Organic peroxide type F; liquid; Division 5.2; UN 3109.

Safety and handling

Keep containers tightly closed. Store and handle *Butanox* P-50 in a dry well-ventilated place away from sources of heat or ignition and direct sunlight. Never weigh out in the storage room.

Avoid contact with reducing agents (e.g. amines), acids, alkalis and heavy metal compounds (e.g. accelerators, driers and metal soaps).

Please refer to the Safety Data Sheet (SDS) for further information on the safe storage, use and handling of *Butanox* P-50. This information should be thoroughly reviewed prior to acceptance of this product. The SDS is available at www.akzonobel.com/polymer.

Applications

Butanox P-50 is a high reactive methyl isopropyl ketone peroxide (MIPKP) for the optimal curing of unsaturated polyester resins in the presence of a cobalt accelerator at room and elevated temperatures.

The curing system *Butanox* P-50/cobalt accelerator is particularly suitable for the curing of gelcoat resins and laminating resins used for the production of boat hulls, deck parts, truck panels, car panels or sanitary ware products. Practical experience has proven that by the guaranteed low water content and the absence of polar compounds in *Butanox* P-50, this peroxide is very suitable in GRP products for high demanding end-markets like marine applications (boat building).

For room temperature application it is necessary to use *Butanox* P-50 together with a cobalt accelerator (e.g. Accelerator NL-49P).

Dosing

Depending on working conditions, the following peroxide and accelerator dosage levels are recommended:

<i>Butanox</i> P-50	1 - 4 phr*
Accelerator NL-49P	0.5 - 3 phr

Cure Characteristics

In a high reactive standard orthophthalic polyester resin in combination with Accelerator NL-49P (= 1% cobalt) or Accelerator NL-51P (= 6% cobalt) the following application characteristics were determined.

Gel times at 20°C

2 phr <i>Butanox</i> P-50 + 1.0 phr Acc. NL-49P	6 minutes
2 phr <i>Butanox</i> M-50 + 1.0 phr Acc. NL-49P	7 minutes

* phr = parts per hundred resin

Cure of 0.5 mm ISO/NPG gelcoat

(800 mm wet = 500 mm dry)

ISO/NPG (not preacc.)	100	100	100
<i>Butanox</i> M-50	2	2	
<i>Butanox</i> P-50			2
Accelerator NL-49P	1.5		
Accelerator 553		0.35	0.35
Cobalt content (mg/kg)	150	67	67
Geltime 800 mm layer/wet (min.)	12	15	12
Drying time (min.)	73	58	49
Persoz hardness			
after 3 hours	-	-	24
after 4 hours	19	25	37
after 6 hours	34	47	55
after 24 hours	122	132	146

Cure of 2 mm laminates at 20°C

2 mm laminates have been made with a 450 g/m² glass chopped strand mat. The glass content in the laminates is 30% (w/w).

The following parameters were determined:

- Time-temperature curve.
- Speed of cure expressed as the time to achieve a Barcol hardness (934-1) of 0-5 and 25-30 respectively.

	Time to Peak (min.)	Peak exotherm (°C)
2 phr <i>Butanox</i> P-50 + 0.25 phr Acc. NL-51P	28	39
2 phr <i>Butanox</i> M-50 + 0.25 phr Acc. NL-51P	41	29
	Barcol (h)	Barcol (h)
2 phr <i>Butanox</i> P-50 + 0.25 phr Acc. NL-51P	0.5	1.5
2 phr <i>Butanox</i> M-50 + 0.25 phr Acc. NL-51P	1	3.5

Pot life at 20°C

Pot lives were determined of a mixture of *Butanox* P-50 and a non-preaccelerated UP resin at 20°C.

2 phr <i>Butanox</i> P-50	15 hrs
4 phr <i>Butanox</i> P-50	6 hrs

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